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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,164	12/21/2001	Jian-Guo Chen	Arulambalam 2-1-1-15	6810

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EXAMINER	
NGO, KIET TUAN	
ART UNIT	PAPER NUMBER
2195	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/037,164	CHEN ET AL.	
	Examiner	Art Unit	
	Kiet T. Ngo	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 December 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 December 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-16 are pending in the application.

2. To insure proper consideration and to the extent required by 37 CFR 1.56, applicant is required to update status information hereby incorporated by reference (e.g. serial number of "Smooth Deficit Weighted Round Robin Scheduling," see specification, pg. 9, lines 27-29) with a serial number or patent number.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "decision step 92" (pg. 11, lines 16-20) refers to figure 1B but no reference number 92 is listed. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112 2nd Paragraph

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following terms lack antecedent basis:

(i) "the scheduler" in claims 2-3.

(ii) "the plurality of service classes" in claim 8.

(iii) "the scheduling scheme" in claim 9.

B. The following claim language is indefinite:

(i) As per claim 1, line 6, it is not clearly understood what's the criteria used by the selector to select one of the plurality of scheduling schemes (i.e. based on type of data, priority of data, class of network users, or else).

(ii) As per claim 2, line 1, and claim 4, lines 2-3, it is uncertain whether "each user" refers to "one of a plurality of network users" in claim 1, line 3.

(iii) As per claim 2, line 2, and claim 3, line 3, it is not clearly indicated what the relationship is between "the scheduler" and "a plurality of scheduling schemes" in claim 1, line 4 (i.e. the scheduler is a separate means that connected to the network resource to service data using the selected scheduling scheme?).

(iv) As per claim 7, line 2, it is uncertain what is meant by "manually operable" (i.e. it is unclear what "manually operable" means in relationship to the selecting of a scheduling scheme whether it refers to manually flipping a switch on an integrated circuit to choose scheduling schemes or via other means of switching a selection?)

(v) As per claim 9, line 4, it is not clearly indicated where "the data" originated? (i.e. from each network user having different priority class);

Lines 3-5, it is uncertain how the selected scheduling scheme was selected among a plurality of scheduling schemes (i.e. based upon type of data, class/priority of data, or class of network users);

Lines 8-10, it is not clearly understood what is meant by "an eligible queue output signal" (i.e. a separate queue that stored a plurality of signals received from a plurality of scheduling blocks when there is data awaiting service in the respective scheduling blocks);

Line 6-7 and 11-14, it is not clearly indicated how the "class selector" can perform it's determining function since there is no connection between "the controller" and the class selector in order for the class selector to know what scheduling scheme had been selected.

(vi) As per claim 13, line 2, the term "smooth deficit weighted" is indefinite. (i.e. what's the smooth deficit weighted compared to?)

(vii) As per claims 15-16, these claims have the same deficiency as claims 1-9 above. Correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Vaitzblit et al (hereafter Vaitzblit) (U.S. Patent #5,528,513).

7. As to claims 1 and 16, Vaitzblit teaches the invention as claimed including an integrated circuit structure [20, 50, 52, 53, 54, Figure 1] for selecting data for service by a shared network resource [45, 60, Figure 1], wherein data is supplied from a plurality of network users [25, 30, Figure 1], said integrated circuit structure comprising:

a circuit module implementing a plurality of scheduling schemes [Abstract lines 4-5; col. 3, lines 27-31]

a selector for selecting one of the pluralities of scheduling schemes for controlling the servicing of the data [col. 3, lines 29-30] by the network resource [Abstract lines 8-13, col. 4, lines 62-67; col. 5, lines 15-17].

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 2-3, 6, 8, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaitzblit (U.S. Patent #5,528,513), as applied to claims 1 and 16 above.

10. As to claim 2, Vaitzblit doesn't specifically teach that the class is assigned to each user. However, Vaitzblit teaches assigning classes to a task and servicing data from each class in accordance with the selected scheduling scheme [Abstract lines 2-3, 9-13].

11. It would have been obvious to one of ordinary skill in the art at the time of the intention was made to have included assigning class to user in a system because doing so would give the network users a priority within each service class thus accurately allowing network resources to be allocated to correct network user.

12. As to claim 3, Vaitzblit as modified teaches the invention substantially as claimed including:

an integrated circuit structure wherein each user within a service class is assigned a priority within the service class, and wherein the scheduler causes the network resource to service data from each user in accordance with the priority of the user within the service class [col. 4, lines 31-34]. In addition, Vaitzblit mentions "The

scheduling is hierarchical in that a class of activity is scheduled first, and then individual tasks within that class are scheduled".

13. As to claim 6, Vaitzblit as modified teaches an integrated circuit wherein the data is in the form of data packets [col. 3, lines 11-15].

14. As to claim 8, Vaitzblit teaches the invention an integrated circuit structure wherein the selector is operable in accordance with the type of data presented by the plurality of service classes [col. 4, lines 63-67; col. 8, lines 3-29].

15. As to claim 15, Vaitzblit fails to teach the option of having a second scheduling scheme choice. However, Vaitzblit teaches that a higher priority task will be processed first with a rate-monotic scheme [col. 4, lines 22-25] and then the remaining tasks will be processed in accordance to priority based on a weighted round robin scheduling scheme if no higher priority task are available [col. 4, lines 64-68]. It would have been obvious to one of ordinary skill in the art at the time the invention was made that Vaitzblit's scheduler would include the option of not addressing a scheduling scheme selection and rather simply use one scheduling scheme.

16. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaitzblit (U.S. Patent #5,528,513), in view of Courtright et al (hereafter Courtright) (U.S. Patent #6157,963).

17. As to claim 4, Vaitzblit doesn't specifically detail having multiple queues for one user. However, Courtright discloses multiple memory queues for one user [col. 9, lines 12-16].

18. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Vaitzblit and Courtright, Courtright's multiple queues would increase the flexibility of Vaitzbliz's System by allowing for different queues for different types of user data or multiple queues for one user who may have large amounts of data.

19. As to claim 7, Courtright teaches that the selector can be manually operable for selecting one of the scheduling schemes [col. 8, lines 31-42].

20. Claims 9 – 11, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaitzblit (U.S. Patent #5,528,513) in view of Courtright (U.S. Patent #6,157,963) and in view of Calamvokis (U.S. Patent #5,572,522)

21. As to claim 9, Vaitzblit and Courtright do not teach a queue output signal, which used by a class selector in respect to the scheduling scheme determines the data to be serviced. However, the teachings of Calamvokis [col. 2, lines 65-67; col. 3 lines 1-15 Figure 2] show queue output signals that when sent through the proper de-multiplexer

will then provide an appropriate address for the corresponding cell of data in memory to be serviced.

22. It would have been obvious to one of ordinary skill in the art at the time of the invention was made, to combine the teachings of Vaitzblit, Courtright, and Calamvokis' because when fed to the class selector would allow the class selector to determine which queue would be valid for servicing by a network resource.

23. As claim 10, Vaitzblit teaches the diagram of a C.P.U. [50, Figure 1] and memory [52, Figure 1] along with his scheduler [53, Figure 1] residing on a video file server [20, Figure 1].

24. As to claim 11, Vaitzblit teaches the first and the second queue, and wherein the selected scheduling scheme determines whether said first queue and both said first and said second queues are processed by each one of the plurality of scheduling blocks. Vaitzblit [col. 8, lines 3-29]

25. As to claim 13, Vaitzblit doesn't teach a smooth weighted round-robin scheduling scheme but rather states that a weighted round-robin scheduling scheme can be used [col. 4, lines 65-67]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include smooth weighted round-robin scheduling

schemes because it would add different type of round-robin scheduling schemes in Vaitzblit's system.

26. As to claim 14, Vaitzblit teaches a rate monotonic and a weighted round-robin scheduling scheme but fails to teach strict priority, bandwidth limited strict priority, and strict priority plus smooth deficit weighted round robin. However, Courtright discloses that any combination of scheduling schemes can be implemented on his scheduler [col. 8, lines 44-46].

27. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaitzblit (U.S. Patent #5,528,513) in view of Courtright (U.S. Patent #6,157,963), and further in view of Joffe (U.S. Patent #6,014,367)

28. As to claims 5 and 12, Vaitzblit teaches one user/one memory queue association where each user is allocated only one memory queue and Courtright teaches of multiple memory queues per user but both fails to specifically mention a waiting and active queue for each user. However, Joffe teaches the active queue and another waiting queue, [Figure 3A-3D; Figure 12], as well as details the advantages of these queues.

29. It would have been obvious to one of ordinary skill in the art at the time of the invention was made, to combine the teachings of Vaitzblit, Courtright, and Joffe,

because Joffe's different queues would improve by the advantages of network resource scheduling, by placing data into incoming and outgoing queues as data arrived.

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

" ATM local area network switch with dual queues" Laurer U.S. Patent (#5,732,087).

"Method for accessing one or more streams in a video storage system using multiple queues and maintaining continuity thereof" Baird U.S. Patent (#5,802,394).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiet T. Ngo whose telephone number is (571)272-6451. The examiner can normally be reached on Mon. - Fri. 830 a.m.-6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-An Ai can be reached on (571)272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Kiet Tuan Ngo

Examiner

Art Unit 2195